

IN THE CLAIMS:

1. (Currently Amended) A method of measuring at least two cultivation parameters in a cell culture, comprising:

(a) establishing at least one cell culture in at least one bioreactor, wherein each bioreactor comprises at least two optical chemical sensors;

(b) exciting the at least two optical chemical sensors to generate emission and/or light absorption;

(c) detecting the emission and/or absorption ~~obtained~~ generated by the at least two optical chemical sensors in (b); and

(d) analyzing the detected emission and/or absorption ~~obtained~~ detected in (c) to assess the ~~culture~~ at least two cultivation parameters measured.

a1 2. (Currently Amended) The method of claim 1, wherein the at least two optical chemical sensors are excited using at least one light emitting diode per optical chemical sensor.

3. (Original) The method of claim 1, wherein the emission and/or absorption is detected using at least one photodetector, wherein the wavelength range of the photodetector corresponds to an emission and/or absorption wavelength of the photodetector's respective optical chemical sensor.

4. (Currently Amended) The method of claim 1, wherein the ~~culture~~ at least two cultivation parameters measured are selected from the group consisting of: pH, dissolved oxygen, carbon dioxide, glucose concentration, nutrient concentration, lactate concentration, phosphate concentration, ammonia concentration, metal ion concentration, temperature and combinations thereof.

5. (Currently Amended) The method of claim 1-~~or~~4, wherein an optical density of the cell culture is measured.

6. (Currently Amended) A method of measuring at least two cultivation parameters in at least two cell cultures, comprising:

(a) establishing at least one cell culture in at least two bioreactors in parallel, wherein each bioreactor comprises at least two optical chemical sensors;

(b) exciting the optical chemical sensors to generate emission and/or light absorption;

(c) detecting the emission and/or absorption ~~obtained~~ generated by the optical sensors in (b); and

(d) analyzing the detected emission and/or absorption ~~obtained~~ detected in (c) to assess the ~~culture~~ at least two cultivation parameters measured.

a 7. (Currently Amended) The method of claim 6, wherein the at least two optical chemical sensors are excited using at least one light emitting diode per optical chemical sensor.

8. (Original) The method of claim 6, wherein the emission and/or absorption is detected using a spectrometer and diode array.

9. (Currently Amended) The method of claim 6, wherein the ~~culture~~ at least two cultivation parameters measured are selected from the group consisting of: pH, dissolved oxygen, carbon dioxide, glucose concentration, phosphate concentration, ammonia concentration, lactate concentration, metal ion concentration, nutrient concentration, temperature and combinations thereof.

a¹ 10. (Currently Amended) The method of claim 6-~~or~~9, wherein the optical densities of the at least two cell cultures are measured.

[11-24. ~~(Withdrawn from consideration)~~. ^{Canceled}

(See page 7 of this response)

11 25. (Currently Amended) A method of optimizing at least two cultivation parameters in a cell culture, comprising:

(a) establishing at least one cell culture in at least one bioreactor, wherein each bioreactor comprises at least two optical chemical sensors;

(b) exciting the at least two optical chemical sensors to generate emission and/or light absorption;

(c) detecting the emission and/or absorption ~~obtained~~ generated by the at least two optical chemical sensors in (b); and

a¹ (d) analyzing the detected emission and/or absorption ~~obtained~~ in (c) to determine whether or not to adjust culture conditions to obtain optimization of the at least two cultivation parameters.

12 26. (Currently Amended) The method of claim 25, wherein the at least two optical chemical sensors are excited using at least one light emitting diode per optical chemical sensor.

13 27. (Currently Amended) The method of claim 26, wherein the emission and/or absorption is detected using at least one photodetector, wherein the wavelength range of the at least one photodetector corresponds to an emission and/or absorption wavelength of the photodetector's respective optical chemical sensor.

114/28. (Currently Amended) The method of claim 25, wherein the ~~culture~~ at least two cultivation parameters measured are selected from the group consisting of: pH, dissolved oxygen, carbon dioxide, glucose concentration, nutrient concentration, temperature, lactate concentration, ammonia concentration, phosphate concentration, metal ion concentration and combinations thereof.

115/29. (Currently Amended) The method of claim 25 or 28, wherein an the optical density of the cell culture is determined.

116/30. (Currently Amended) A method of optimizing at least two cultivation parameters in at least two cell cultures, comprising:

(a) establishing at least one cell culture in at least two bioreactors in parallel, wherein each bioreactor comprises at least two optical chemical sensors;

a) (b) exciting the optical chemical sensors to generate emission and/or light absorption;

(c) detecting the emission and/or absorption ~~obtained in (b)~~ generated by the optical chemical sensors; and

(d) analyzing the detected emission and/or absorption obtained in (c) to determine whether or not to adjust culture conditions to obtain optimization of the at least two cultivation parameters.

117/31. (Original) The method of claim 30, wherein the optical chemical sensors are excited using at least one light emitting diode per optical chemical sensor.

118/32. (Original) The method of claim 30, wherein the emission and/or absorption is detected using a spectrometer and diode array.

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19/33. (Currently Amended) The method of claim 30, wherein the culture ~~at least~~
two cultivation parameters measured are selected from the group consisting of: pH,
dissolved oxygen, carbon dioxide, glucose concentration, nutrient concentration,
temperature, lactate concentration, ammonia concentration, phosphate concentration, metal
ion concentration and combinations thereof.

a!
^{1b}
20/34. (Currently Amended) The method of claim 30 ~~or 33~~, wherein an the optical
densities ~~density~~ of each of the at least two cell cultures is are determined.
